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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,196	11/20/2001	Chih-Chien Liu	UMC-96-279 CON2	3908

25235 7590 07/14/2004

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EXAMINER	
SERGENT, RABON A	
ART UNIT	**PAPER NUMBER**
1711	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,196	LIU ET AL.	
	Examiner	Art Unit	
	Rabon Sergent	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-32,40,41,43 and 44* is/are allowed.

6)☒ Claim(s) *33-35,37-39 and 42* is/are rejected.

7)☒ Claim(s) *36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The terminal disclaimer filed on April 26, 2004 disclaiming the terminal portion of any patent granted on this application that would extend beyond the expiration dates of U.S. 6,117,345 and any patent granted on application number 09/546,174 has been reviewed and is accepted. The terminal disclaimer has been recorded.

2. Claims 33, 34, 38, and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Firstly, with respect to claim 33, it is unclear to what extent language denoted by "the likelihood" constitutes a definitive limitation. At what point or under what conditions would the "likelihood" exist?

Secondly, it is unclear how the subject matter of claim 38 pertains to claim 35, because there is no requirement in claim 35 that the mask layer be removed. It appears that claim 38 should depend from claim 36.

3. Claim 42 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Support has not been found for the limitations pertaining to the facet of the cap layer being adapted to reduce etching during the HDPCVD process. The examiner has reviewed applicants' response; however applicants have not referred to claim 42.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 35 and 37 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tobben et al. ('126).

Tobben et al. disclose the production of semiconductor devices containing electrically conductive wires on a substrate, wherein the method comprises the deposition and etching of

layers which correspond to those claimed by applicants. The position is taken that the applicants' claimed step of patterning the mask layer is met by the disclosure pertaining to developing and patterning the mask at column 3, lines 29-40. See figures and columns 2-4. The subject matter of claim 37 is considered to be met at column 3, lines 52-55; patentees refer to a second mask formed within the cap layer. Patentees further teach at column 4, lines 10-26 that if an additional metalization layer is to be used, then a layer of dielectric material is deposited over the surface of the structure and within the grooves between the wiring lines. Patentees additionally teach that this layer may be formed by depositing silicon dioxide using high density plasma deposition techniques. The position is taken that applicants' method fails to exclude the use of a second metalization layer and that the last step of applicants' claimed process is met by the disclosure pertaining to the high density plasma deposition of the dielectric within the grooves between the wiring lines.

6. Alternatively, in view of the aforementioned teachings within Tobben et al., the position is taken that it would have been obvious to utilize a high density plasma deposition technique to incorporate a dielectric material onto the surface of the wiring line containing substrate and within the grooves between the wiring lines, so as to insulate the wiring lines from external influences.

7. Applicants have argued that claim 35 is patentable over Tobben et al., because Tobben et al. disclose the etching of the metal layer using RIE while a photoresist remains present. Applicants further state that this process can under some circumstances generate contaminants that will likely be deposited within the gap. Applicants' arguments are not well taken, because the arguments are not commensurate in scope with the instant claims; there is no requirement

within claim 35 that the mask layer be removed prior to etching the metal layer and there is no claim language that precludes the use of RIE at this stage of the process. Furthermore, applicants' argument appears more speculative than factual. No evidence has been set forth establishing that the process of Tobben et al. generates the argued contaminants.

8. Claim 36 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (571) 272-1079.

R. Sergent
July 12, 2004

RABON SERGENT
PRIMARY EXAMINER